

Eastern Equine Encephalitis Virus Spreads to N.H.

BY JOHN R. BELL
Associate Editor

The Centers for Disease Control and Prevention has warned of an upswing in cases of eastern equine encephalitis in New England, including—for the first time in 41 years of reporting of the disease—cases occurring in New Hampshire.

In a report discussing cases occurring between August and September of last year, in addition to the seven New Hampshire cases, there were four from Massachusetts—five times the average of 0.08 for the previous 10 years (MMWR 2006;55:697-700).

Dengue: Tropical Climate Warning

Increases in the incidence of dengue hemorrhagic fever in tropical countries also have prompted the CDC to remind health care providers to consider this disease when diagnosing febrile patients who have recently returned from areas of risk—and to remind the public of protective measures.

There were 96 confirmed cases of dengue in U.S. residents last year, the CDC reported (MMWR 2006;55:700-2). Dengue, which is not endemic to North America, is not seen commonly by physicians here—but with increasing international travel, global warming, and slackening antimosquito efforts in some countries, physicians soon may see more suspected cases of dengue in their practice—particularly during the summer months.

Pediatricians and the people they advise need to remember that when they go to tropical areas that mosquitoes are a problem since these insects carry diseases not found in the United States. Malaria chemoprophylaxis doesn't protect against mosquitoes—just against the malaria that they carry, Dr. McMillan said.

The CDC on its Web site advises preventing dengue transmission by using insect repellent including DEET. The American Academy of Pediatrics warns that DEET should not be used on infants younger than 2 months nor on the hands of young children, and that when using on a child's face, the areas around their eyes and mouth should be avoided. Similarly, product labels for repellents containing oil of lemon eucalyptus note that this product should not be used on children younger than 3 years.

Unlike EEEV, Dr. McMillan noted, dengue is not now carried by mosquitoes in this country—and EEEV is very rare where it exists. "The CDC report [on EEEV] is significant because EEEV, unlike dengue, has high mortality rate associated with it."

The CDC advises health care providers that they need to be aware of the risk "even in areas that have not previously had much activity."

Eastern equine encephalitis virus (EEEV) is spread by mosquitoes and can affect horses, as well as humans.

Mosquitoes carrying the EEEV most commonly inhabit swamps and marshes, the report said.

Notably, all infected patients spent time working or socializing near such wetland

areas, and all lived within half a mile of a swamp or cranberry bog.

Dr. Julia McMillan, a member of the American Academy of Pediatrics' Committee on Infectious Disease and professor of pediatrics at Johns Hopkins University, Baltimore, agreed with the CDC's recommendations to use insect repellent and long-sleeved clothing to keep insects at bay.

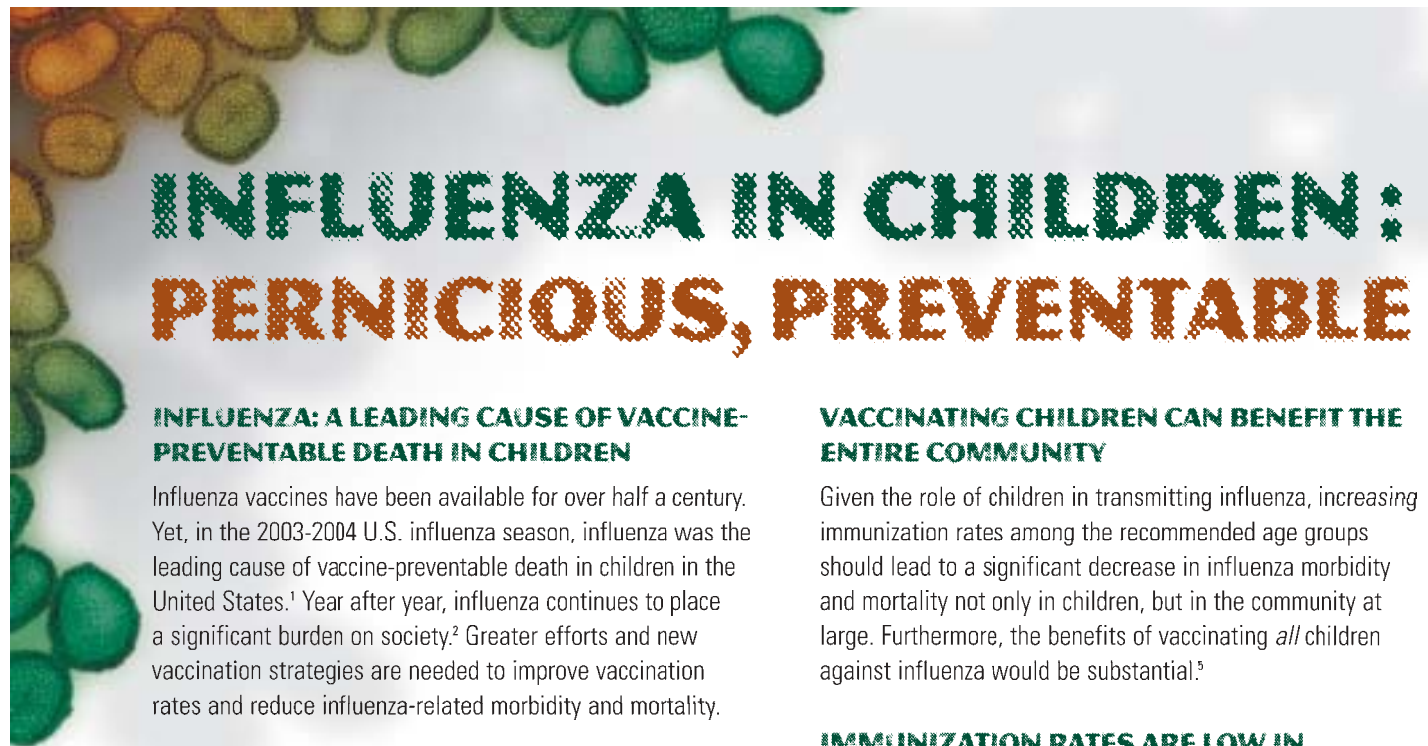
Given that EEEV, like malaria and dengue, is caused by a virus, there is no

specific treatment for this potentially fatal infection.

"I think that actually is one of the scariest things. It's the reason why protecting children and ourselves is so important, Dr. McMillan said.

When asked if the chemicals in insect repellent are safe for children, she said moderation is called for.

"There is no way to keep a child completely safe," she said. "But that doesn't mean [parents] shouldn't try. It's just im-



INFLUENZA IN CHILDREN: PERNICIOUS, PREVENTABLE

INFLUENZA: A LEADING CAUSE OF VACCINE-PREVENTABLE DEATH IN CHILDREN

Influenza vaccines have been available for over half a century. Yet, in the 2003-2004 U.S. influenza season, influenza was the leading cause of vaccine-preventable death in children in the United States.¹ Year after year, influenza continues to place a significant burden on society.² Greater efforts and new vaccination strategies are needed to improve vaccination rates and reduce influenza-related morbidity and mortality.

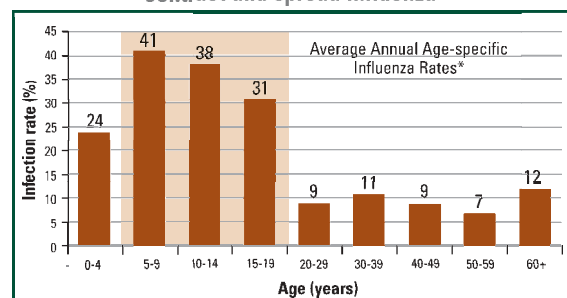
SUBSTANTIAL MORBIDITY AND MORTALITY EVEN IN HEALTHY CHILDREN¹

Significant morbidity and mortality is seen in healthy children as well as in those at high risk. During the 2003-2004 influenza season, 153 children died from influenza-related causes, 37% of whom were aged 5 to 17 years. Of these 153 children, **47% were previously healthy**, with no underlying medical conditions.

CHILDREN ARE VECTORS FOR INFLUENZA TRANSMISSION

Since children spend much of the day in close contact with other children, an infected child can easily spread the virus to classmates at day care or school. In one study, children aged 5-14 years were approximately 4 times more likely to be infected with influenza than adults (see chart).³ A school-aged child is often the origin of a flu epidemic, spreading the virus to family members and the community at large, including the elderly and other high-risk populations.⁴

School-aged children are most likely to contract and spread influenza³



³Derived combined rates for influenza types A (H1N1 and H3N2) and B over the course of 7 outbreaks during the years between 1976 and 1981 in Tecumseh, Michigan. Monto AS, Sullivan KM. *Epidemiol Infect.* 1993;110:145-160³

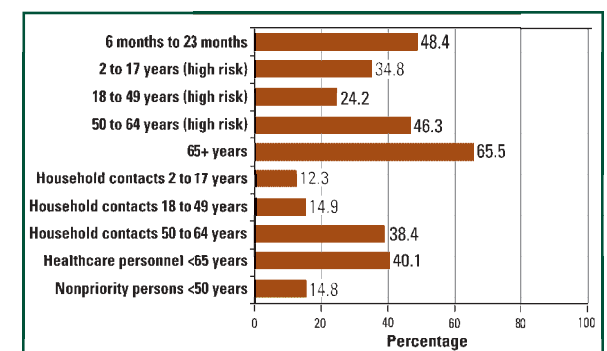
VACCINATING CHILDREN CAN BENEFIT THE ENTIRE COMMUNITY

Given the role of children in transmitting influenza, increasing immunization rates among the recommended age groups should lead to a significant decrease in influenza morbidity and mortality not only in children, but in the community at large. Furthermore, the benefits of vaccinating *all* children against influenza would be substantial.⁵

IMMUNIZATION RATES ARE LOW IN CHILDREN AGED 6 TO 23 MONTHS

In the 2004-2005 influenza season, more than half of children aged 6-23 months (the age recommended for vaccination in 2004-2005 by the Advisory Committee on Immunization Practices [ACIP]) did not receive an influenza vaccination.⁶ Thus even among children whom the CDC/ACIP recommend for influenza vaccination, immunization rates are falling well short of the desired goal.

Influenza Vaccination Rates^{6,7}



CDC. *MMWR.* 2005;54(12):304-307⁷

portant to understand that everything is a balance.

"We want children to play outside, but we want them to do it safely. And there are all sorts of ways to do that. One is that we prevent bites from insects that convey infection—but we also don't douse them with so much repellent that it causes harm."

The CDC on its Web page on West Nile virus cites the Environmental Protection Agency's advice: "Do not allow children to handle the [insect repellent]. When using on children, apply to your own hands first and then put it on the child."

Likewise, the AAP warns not to apply DEET (N,N-diethyl-m-toluamide) to the hands of young children and to avoid areas around the eyes and mouth.

Dr. McMillan noted that a new version of the AAP Red Book is being delivered in the coming weeks and will be available online this month.

The new book will include an updated, more specific statement on DEET and will address other insect repellents, such as picaridin.

She said she believes it's too early to say there's a relationship between global warming and any upswing in insect-borne diseases. ■

Fever-Petechiae Dilemma: To Admit or Not to Admit

BY KATE JOHNSON
Montreal Bureau

CHICAGO — A child's death from unsuspected meningococcal disease can keenly heighten an emergency physician's awareness that there are few clues about which children with fever and petechiae are safe to send home, Dr. Jane Knapp said at a meeting sponsored by the American

College of Emergency Physicians.

"You can't pick them out," cautioned Dr. Knapp, professor of pediatrics at the University of Missouri–Kansas City and a pediatric emergency physician at Children's Mercy Hospital in Kansas City, Mo. "But we can't admit every child with fever and petechiae."

Neither clinical nor hematologic features are reliable predictors of meningococcal infection, she added.

Dr. Knapp presented a case from early in her career of a 7-year-old boy who was afebrile on admission. Mental status changes followed by the development of a petechial rash in the emergency department prompted treatment for meningococemia, but he died shortly afterward.

The case highlights the fact that lack of fever is not always a reassuring sign and does not exclude meningococcal infection, she said.

One study of 24 children with meningococcal disease found that 5 had axillary temperatures of less than 37.5° C (*Arch. Dis. Child.* 2001;85:218).

Another study of 381 febrile children with meningococcal infection found that 10% did not have a petechial/purpuric rash, although they did appear unwell (*Pediatrics* 1999;103:E20). An additional 45 (12%) of the children had what the authors called "unsuspected meningococcal disease" (UMD), meaning they were seen in the hospital and discharged with a later positive culture. Of those 45 children, 24 were recalled when their blood culture results came in positive, 14 returned because they had worsened or developed a rash, 5 returned for a scheduled follow-up, and 2 returned because of persistent fever. Two children in the UMD group died after returning to the hospital—one 6 hours and the other 12 hours later.

Comparing the children with UMD to a control group of culture-negative febrile patients, the authors found that the UMD group was on average significantly younger (9 months vs. 14 months), with 82% of them aged between 3 and 36 months. The UMD group also had significantly higher band counts on average (14 vs. 7), compared with the culture-negative patients. However, the authors concluded that the predictive value of the band count is low in this group, because UMD is uncommon in young febrile pediatric patients.

"That study suggests that neither the clinical examination nor the CBC [complete blood count] reliably distinguishes young children with UMD from those with viral illnesses," Dr. Knapp said.

Because this is an area of legal risk for physicians, she said, they are left with a perplexing challenge. One guideline to follow for managing children with a non-blanching rash is whether they appear unwell. If they appear unwell, Dr. Knapp suggested simply admitting them and treating for invasive meningococcal infection. "Could you compromise and send someone home with antibiotics?" she asked. "I would be pretty liberal." ■

...AND STILL PREVALENT

CHILDREN 2 TO 17 YEARS OLD ARE OFTEN CONTACTS OF HIGH-RISK PERSONS, YET ARE RARELY IMMUNIZED

The CDC/ACIP recommend influenza vaccination for children who are household contacts of high-risk individuals.² Nearly 1 in 3 children aged 2 to 17 years is a household contact of a high-risk person (29.3% according to a CDC estimate).⁶ Yet in a recent study, the vaccination rate for this group was only 12.3%—even lower than the rate for non-targeted persons <50 years (see chart).⁶ Since children play a major role in influenza transmission, this statistic is especially alarming.

ACIP HAS EXPANDED ITS RECOMMENDATIONS FOR THE 2006-2007 INFLUENZA SEASON

Children Aged 2 to 5 Years and Their Close Contacts⁸

During its February meeting, the ACIP expanded the original recommendation for vaccinating children aged 6 to 23 months to include children aged 24 to 59 months. The ACIP also recommends expanding routine influenza vaccination for household contacts and out-of-home caregivers of children aged 24 to 59 months. Approximately 5.3 million more children and 11.4 million more healthy close contacts will be included in the new recommendations.

THE CHALLENGE—AND OPPORTUNITY—AT HAND

There is a pressing need for increasing vaccination rates among children in the ACIP-recommended priority groups: children aged 6-59 months, and children who are household contacts of these and other high-risk individuals. The newly expanded recommendations may present further challenges to immunization efforts, particularly among the 24- to 59-month age group and their household contacts. Moreover, studies have shown that increasing vaccination rates among all children aged 2-17 years can decrease influenza morbidity and mortality in the general population.⁵

WHAT YOU CAN DO TO HELP: INITIATE THE VACCINATION CONVERSATION

Immunization outcomes are strongly influenced by physicians' recommendations.⁹ This holds true for both healthy and high-risk children. Immunization outcomes showed that 70% of children were vaccinated if the parents recalled a physician's recommendation versus only 3% if they did not. Physicians must therefore play a proactive role in 1) identifying children who are recommended by the ACIP for influenza vaccination and 2) educating parents about the importance of immunization. Such grassroots efforts, combined with comprehensive vaccination strategies, will better help protect children, their families, and the entire community against influenza.

References: 1. Bhat N, Wright J, Broder K, et al. Influenza-associated deaths among children in the United States, 2003-2004. *N Engl J Med.* 2005;353(24):2559-2567. 2. Centers for Disease Control and Prevention. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR.* 2005;54(RR-09):1-40. 3. Monto AS, Sullivan KM. Acute respiratory illness in the community. Frequency of illness and the agents involved. *Epidemiol Infect.* 1993;110:145-160. 4. Elveback LR, Fox JP, Ackerman E, et al. An influenza simulation model for immunization studies. *Am J Epidemiol.* 1976;103:152-165. 5. Reichert TA, Sugaya N, Fedson DS, Glezen WP, Simonsen L, Tashiro M. The Japanese experience with vaccinating schoolchildren against influenza. *N Engl J Med.* 2001;344:889-896. 6. Centers for Disease Control and Prevention. Interim estimates of populations targeted for influenza vaccination from 2003 National Health Interview Survey Data and Health Estimates for 2004 based on influenza vaccine shortage priority groups. Available at: <http://www.cdc.gov/flu/professionals/vaccination/pdf/targetpopchart.pdf>. Accessed June 16, 2006. 7. Centers for Disease Control and Prevention. Estimated influenza vaccination coverage among adults and children—United States, September 1, 2004–January 31, 2005. *MMWR.* 2005;54(12):304-307. 8. Centers for Disease Control and Prevention. CDC's advisory committee recommends expanded influenza vaccinations for children (press release). Available at: <http://www.cdc.gov/oc/cc/media/pressrel/r060223.htm>. Accessed June 16, 2006. 9. Poehling KA, Speroff T, Dittus RS, et al. Predictors of influenza virus vaccination status in hospitalized children. *Pediatrics.* 2001;108:E99.